UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/056,386	01/24/2002	Sheryl Leigh Woodward	2001-0246	3901

7590 01/12/2005

Samuel H. Dworetsky
AT&T CORP.
P. O. Box 4110
Middletown, NJ 07748-4110

EXAMINER	
LEUNG, CHRISTINA Y	

ART UNIT	PAPER NUMBER
2633	

DATE MAILED: 01/12/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/056,386	WOODWARD, SHERYL LEIGH	
	Examiner	Art Unit	
	Christina Y. Leung	2633	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *24 January 2002*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-26* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-26* is/are rejected.

7)☒ Claim(s) *14* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *11 April 2002* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *24 January 2002*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Objections

1. Claim 14 is objected to because of the following informalities:

Claim 14 recites "wherein said said second filter" (sic) in line 1 of the claim; Examiner respectfully suggests removing the second instance of the word "said" in this phrase.

Appropriate correction is required.

Drawings

2. The drawings are objected to because Figure 1 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). Corrected drawings in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.121(d)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

4. Claims 1-5, 8-10, 18-21, and 23 are rejected under 35 U.S.C. 102(e) as being anticipated by Takahashi et al. (US 2001/0030786 A1).

Regarding claim 1, Takahashi et al. disclose an add multiplexer (Figure 1) having an input port (where fiber 13 inputs a signal in the figure) and an output port (where fiber 14 outputs a signal in the figure), comprising:

an optical circulator (circulator 11) comprising a first port, a second port, and a third port, the first port of the optical circulator coupled to the input port of the add multiplexer;

an optical monitor mechanism (including filter 20 and detector 21 within a controller 29; page 3, paragraph [0028]) coupled to the third port of the optical circulator;

a wavelength add mechanism (including grating 15 and circulator 12) coupled to the second port of the optical circulator; and

the wavelength add mechanism being coupled to the output port of the add multiplexer (page 1, paragraph [0008]; page 2, paragraph [0023]).

Examiner notes that Figure 4 of Applicant's specification also shows that an "add mechanism," element 206, may comprise a circulator and filter such as also disclosed by Takahashi et al.

Regarding claim 2, Takahashi et al. disclose that the optical monitor measures optical power at the third port of the optical circulator (page 3, paragraphs [0028] and [0029]).

Regarding claim 3, Takahashi et al. disclose that the optical monitor measures the wavelength of light at the third port of the optical circulator (using filter 20; page 3, paragraphs [0028], [0029], [0037] and [0038]).

Regarding claim 4. Takahashi et al. disclose that the optical monitor measures both the optical power versus wavelength (Figures 2A and 2B; pages 3 and 4, paragraphs [0037] and [0038]).

Regarding claim 5, Takahashi et al. disclose that the optical monitor mechanism is coupled to the third port of the optical circulator and to the wavelength add mechanism, thereby providing a feedback path. Figure 1 shows how the monitor, i.e., controller 29, is coupled between the third port 27a of circulator 11 and the wavelength add mechanism, specifically grating 15 (page 3, paragraphs [0029] and [0034]).

Regarding claim 8, Takahashi et al. disclose an optical device (Figure 1) for adding signals to an optical system having an input port (where fiber 13 inputs a signal in the figure) and an output port (where fiber 14 outputs a signal in the figure), comprising:

a first optical circulator (circulator 11) comprising a first port, a second port and a third port, the first port of the first optical circulator coupled to the input port;

an optical monitor device (including filter 20 and detector 21 within a controller 29; page 3, paragraph [0028]) coupled to the third port of the first optical circulator;

a filter (grating 15, which is distinct from filter 20) coupled to the second port of the first optical circulator;

a second optical circulator (circulator 12) comprising a first port, a second port and a third port, the second port of the second optical circulator coupled to the filter 15;

an add port (fiber 26) coupled to the first port of the second optical circulator; and the third port of the second optical circulator being coupled to an output port (i.e., fiber 14).

Regarding claim 9, Takahashi et al. disclose a feedback path from the optical monitor device to the filter (the monitor, i.e., controller 29, sends a feedback signal to the filter/grating 15; page 3, paragraphs [0029] and [0034]).

Regarding claim 10, Takahashi et al. disclose that the filter is tunable (page 2, paragraph [0024]).

Regarding claim 18, Takahashi et al. disclose a method for controlling light propagation in an optical transmission system (Figure 1), comprising:

adding an optical signal to the optical transmission system using an optical add mechanism (specifically, circulator 12 and grating 15); and

detecting light propagation from the optical add mechanism using an optical circulator (circulator 11, not circulator 12 of the add mechanism). Added light from circulator 12 as shown in Figure 1 is either reflected by grating 15 or passed through to circulator 11, which is further connected to a detector 21.

Regarding claim 19, Takahashi et al. disclose feeding back information related to the detected light propagation from the optical circulator 11 to a tunable optical device (grating 15). Light detector at detector 21 from circulator 11 is used in controller 29 to feed back information to tunable grating 15 (page 3, paragraphs [0029] and [0034]).

Regarding claim 20, Takahashi et al. disclose a method for adding an optical signal to an optical transmission system (Figure 1), comprising:

adding a first optical signal in a wavelength channel to the optical transmission system (at fiber 26, through circulator 12);

detecting wavelength propagation responsive to adding the first optical signal using an optical circulator (circulator 11 receives light from circulator 12 that has not been reflected by grating 15 and sends it to detector 21); and

tuning a tunable optical device in response to detecting the wavelength propagation (information from detector 21 is used by controller 29 to tune the grating 15; page 3, paragraphs [0029] and [0034]).

Regarding claim 21, the tunable optical device is a tunable filter (page 2, paragraph [0024]).

Regarding claim 23, Takahashi et al. disclose feeding back information related to the detected light propagation from the optical circulator 11 to the tunable optical device 15 (again, information from detector 21 is used by controller 29 to tune the grating 15; page 3, paragraphs [0029] and [0034]).

5. Claims 1, 2, 7, 11 and 13 are rejected under 35 U.S.C. 102(b) as being anticipated by Miyakawa et al. (US 5,926,300 A).

Regarding claim 1, Miyakawa et al. disclose an add multiplexer (Figure 2) having an input port (where "input light" is inputted in the figure) and an output port (where "output light" is outputted in the figure), comprising:

an optical circulator (circulator 11) comprising a first port, a second port, and a third port, the first port of the optical circulator coupled to the input port of the add multiplexer;

an optical monitor mechanism 12 coupled to the third port of the optical circulator (Miyakawa et al. disclose that element 12 may be a monitor; column 3, lines 46-54);

a wavelength add mechanism (comprising circulator 2 and grating 4) coupled to the second port of the optical circulator; and

the wavelength add mechanism being coupled to the output port of the add multiplexer (i.e., the port coupled to fiber 2c, which outputs "output light").

Regarding claim 2, Takahashi et al. disclose that the optical monitor 12 measures optical power at the third port of the optical circulator (column 3, lines 46-54).

Regarding claim 7, Miyakawa et al. disclose a drop mechanism (comprising circulator 1 and grating 3) is coupled in between the input port of the add multiplexer (i.e., the port coupled to fiber 1a, which inputs "input light") and the first port of the optical circulator.

Regarding claim 11, Miyakawa et al. disclose an add/drop multiplexer (Figure 2) having an input port (where "input light" is inputted in the figure) and an output port (where "output light" is outputted in the figure), comprising:

a wavelength drop mechanism (including circulator 1 and grating 3) coupled to the input port;

a wavelength add mechanism (including circulator 2 and grating 4);

an optical circulator (circulator 11, which is distinct from either circulator in the drop or add mechanisms) comprising a first port, a second port, and a third port, the first port of the optical circulator coupled to the wavelength drop mechanism and the second port of the optical circulator coupled to the wavelength add mechanism (Figure 2 shows how circulator 11 is situated between the drop and add mechanisms); and

the wavelength add mechanism being coupled to an output (Figure 2 shows how the add mechanism, specifically circulator 2, is coupled to an output, as it outputs "output light").

Regarding claim 13, Miyakawa et al. disclose an add/drop multiplexer (Figure 2) comprising:

an input port (where "input light" enters as shown in the figure);

a first optical circulator (circulator 1) comprising a first port, a second port and a third port, the first port coupled to the input port;

a first filter (grating 3) coupled to the second port of the first optical circulator 1;

a drop port coupled to the third port of the optical circulator (i.e., fiber 1c, where "drop light" is outputted);

a second optical circulator (circulator 11) having a first port, a second port and a third port, the first port of the second optical circulator coupled to the first filter 3;

a second filter (grating 4) coupled to the second port of the second optical circulator;

a third optical circulator (circulator 2) having a first port, a second port and a third port, the second port of the third optical circulator coupled to the second filter 4;

an add port coupled to the first port of the third optical circulator (i.e., fiber 2a, where "add light" is inputted); and

an output port coupled to the third port of the third optical circulator (i.e., fiber 2c, where "output light" is outputted).

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

7. Claims 12, 14, 15, and 24-26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Miyakawa et al. in view of Takahashi et al.

Regarding claim 12, Miyakawa et al. disclose a multiplexer (Figure 2) as discussed above with regard to claim 11, and they further disclose an optical monitor mechanism (terminal 12 may be a monitor; column 3, lines 46-54), but they do not specifically disclose a monitor coupled between the circulator and the wavelength add mechanism providing a feedback to the wavelength add mechanism.

However, Takahashi et al. teach a system related to the one disclosed by Miyakawa et al. including a wavelength add mechanism (Figure 1 shows adding a signal from fiber 26 using circulator 12 and grating 15) and another circulator 11. Takahashi et al. further disclose a monitor (detector 21 in controller 29) coupled between the circulator 11 and the wavelength add mechanism (i.e., grating 15) providing a feedback to the wavelength add mechanism (page 3, paragraphs [0029] and [0034]).

It would have been obvious to a person of ordinary skill in the art to use a monitor and a feedback path as taught by Takahashi et al. in the system disclosed by Miyakawa et al. in order to adjust the wavelength add mechanism to counteract undesired variations in the added wavelengths. One in the art would have been particularly motivated to use a feedback path as taught by Takahashi et al. in order to prevent the wavelength add mechanism from experiencing temperature variations that would affect the wavelength filtering function of the device, for example (Takahashi et al., page 1, paragraph [0009]; page 2, paragraph [0013]).

Regarding claims 14 and 15, Miyakawa et al. disclose a multiplexer as discussed above with regard to claim 13, but they do not specifically disclose that the second filter is tunable or a feedback loop.

However, again, Takahashi et al. teach a system related to the one disclosed by Miyakawa et al. including a circulator 12 and filter (grating 15) for adding wavelengths and another circulator 11. Takahashi et al. also teach that the filter is tunable (page 2, paragraphs [0023] and [0024]) and further teach a feedback loop from circulator 11 to the filter 15 (page 3, paragraphs [0029] and [0034]).

Regarding both claims 14 and 15, it would have been obvious to a person of ordinary skill in the art to use tunable filter and a feedback loop as taught by Takahashi et al. in the system disclosed by Miyakawa et al. in order to adjust the multiplexer to counteract undesired variations in the added wavelengths. One in the art would have been particularly motivated to use a feedback loop as taught by Takahashi et al. in order to prevent the filter from experiencing temperature variations that would affect the wavelength filtering function of the device, for example (Takahashi et al., page 1, paragraph [0009]; page 2, paragraph [0013]).

Regarding claims 24 and 25, Miyakawa et al. disclose a method for dropping an optical signal from and adding an optical signal to an optical transmission system (Figure 2), comprising:

receiving optical signals including a first optical signal within a first wavelength channel (i.e., "input light" received at fiber 1a);

dropping the first optical signal within a first wavelength channel out of the optical transmission system using a first optical device (i.e., using grating 3 and circulator 1);

adding a second optical signal within a second wavelength channel to the optical transmission system using a second optical device (i.e., using grating 4 and circulator 2);

detecting wavelength propagation responsive to adding the second optical signal using an optical circulator (circulator 11, which transmits wavelength propgation responsive to adding the second optical signal to a terminal or monitor 12; column 3, lines 42-54)

Miyakawa et al. do not specifically disclose that the first and second optical devices are tunable, and they do not specifically disclose a step of tunable the second optical device. However, Takahashi et al. teach a method related to the one disclosed by Miyakawa et al. including dropping a first optical signal and adding a second optical signal using optical devices (for example, Figure 1 shows adding a signal from fiber 26 using circulator 12 and grating 15). Takahashi et al. also teach that the optical devices for adding and dropping signals comprise tunable elements (i.e., grating 15; page 2, paragraphs [0023] and [0024]) and further teach detecting wavelength propagation responsive to adding the second optical signal at a circulator 11 and then tuning an optical device in response to the detecting (Figure 1 shows a filter 20 and photodetector 21 which detects optical signals and controller 29 for tuning grating 15 in response; page 3, paragraphs [0029] and [0034]). Regarding claim 25 in particular, Takahashi et al. teach using a feedback path from the circulator 11 to the tunable grating 15.

Regarding claims 24 and 25, it would have been obvious to a person of ordinary skill in the art to use tunable optical devices and a feedback path as taught by Takahashi et al. in the method disclosed by Miyakawa et al. in order to adjust the optical devices to counteract undesired variations in the dropped or added wavelengths. One in the art would have been particularly motivated to use a feedback path as taught by Takahashi et al. in order to prevent the

optical devices from experiencing temperature variations that would affect the wavelength filtering function of the devices, for example (Takahashi et al., page 1, paragraph [0009]; page 2, paragraph [0013]).

Regarding claim 25, Miyakawa et al. further disclose that the first optical signal and the second optical signal are the same wavelength (they disclose dropping wavelength "λ1" and adding a same wavelength "λ1"; column 2, lines 48-62).

8. Claims 6 and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Takahashi et al. in view of Liu et al. (US 2003/0007209 A1)

Regarding claim 6 in particular, Takahashi et al. disclose a multiplexer (Figure 1) as discussed above with regard to claim 1 and further disclose that the optical monitor mechanism is coupled to the third port of the optical circulator 11 and to a tunable device (grating 15), thereby providing a feedback path. Regarding claim 20 in particular, Takahashi et al. disclose a method for adding an optical signal as discussed above with regard to claim 20. They do not specifically disclose a tunable source.

However, Liu et al. teach an add multiplexer (Figure 6) related to the one disclosed by Takahashi et al. and further teach using a tunable optical source 44 for adding optical signals (page 3, paragraphs [0040]and [0041]). Regarding claims 6 and 22, it would have been obvious to a person of ordinary skill in the art to use tunable lasers as taught by Liu et al. as the tunable optical devices in the system and method disclosed by Takahashi et al. as a way to allow the system to add signals with different wavelengths as desired at various times.

9. Claim 16 is rejected under 35 U.S.C. 103(a) as being unpatentable over Miyakawa et al. in view of Liu et al.

Regarding claim 16, Miyakawa et al. disclose a multiplexer as discussed above with regard to claim 13, but they do not specifically disclose a tunable laser.

However, Liu et al. teach an add multiplexer (Figure 6) related to the one disclosed by Miyakawa et al. and further teach using a tunable optical source 44 for adding optical signals (page 3, paragraphs [0040]and [0041]). It would have been obvious to a person of ordinary skill in the art to use tunable lasers as taught by Liu et al. as the tunable optical devices in the system disclosed by Miyakawa et al. as a way to allow the system to add signals with different wavelengths as desired at various times.

10. Claim 17 is rejected under 35 U.S.C. 103(a) as being unpatentable over Miyakawa et al. in view of Liu et al. as applied to claim16 above, and further in view of Takahashi et al.

Regarding claim 17, Miyakawa et al. in view of Liu et al. describe a multiplexer including a tunable laser as discussed above with regard to claim 16. Miyakawa et al. do not specifically further disclose a feedback path from the second circulator, but Takahashi et al. further teach a feedback loop from a circulator 11 to a tunable device (grating 15). As similarly discussed above, it would have been obvious to a person of ordinary skill in the art to use tunable optical devices and a feedback path as taught by Takahashi et al. in the system described by Miyakawa et al. in view of Liu et al. in order to adjust the optical devices to counteract undesired variations in the added wavelengths.

Conclusion

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Christina Y. Leung whose telephone number is 571-272-3023. The examiner can normally be reached on Monday to Friday, 6:30 to 3:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jason Chan can be reached on 571-272-3022. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 571-272-2600.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

M. R. SEDIGHIAN
PRIMARY EXAMINER